

Title: Mapping data opportunities relating to food, nutrition and health in the COVID-19 pandemic

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Background: The COVID-19 pandemic has impacted the nutrition and health of individuals, households, and populations globally. Through exposing fragilities in food, health, and social welfare systems, the negative influence of COVID-19 continues to affect the global burden of malnutrition. The nature and scale of these impacts are not yet well understood thus the body of evidence for informing policy is limited. Collating and monitoring relevant data in real-time from multiple levels, sectors and sources is essential in preparing and responding to the ongoing COVID-19 pandemic.

Objectives: To identify key data sources related to food, nutrition, and health indicators in the context of the COVID-19 pandemic.

Methods: A COVID-19, food, nutrition and health framework was developed through multiple iterative rounds of online multidisciplinary discussions including the NNEdPro COVID-19 taskforce and the Swiss Re Institute's Republic of Science, which comprised researchers and clinicians with expertise in data science, food, nutrition, and health.

Results: The proposed framework encompasses five socio-ecological levels which were further sub-divided by six categories of the food and nutrition ecosystem, including food production & supply, food environment & access, food choices & dietary patterns, nutritional status & comorbidities, health & disease outcomes, health & nutrition services. A limited number of exemplar variables for the assessment of global status of food, nutrition and health are identified under each category.

Discussion/Conclusion: This collaborative framework is the first step towards the development of a better understanding of the impact of COVID-19 on food, nutrition, and health systems. Limited data availability and disruption in routine data collection as well as other nutrition assessments during the pandemic are challenges that might limit the potential of the proposed framework. Next steps will include formal research and data gap analysis and the identification, as well as utilisation, of other indicators that could be used as proxies of the variables identified.

Table 1. Proposed data framework in relation to health, food, nutrition, and the COVID-19 pandemic

| | Food Production & Supply | Food Access | Food Choices & Dietary patterns | Nutritional status & comorbidities | Health/disease outcomes | Health & Nutrition Services |
|----------------------------------|---|---|--|---|---|--|
| Individual/ Household | Allotment use/gardening metrics; Policies and incentives | Proportion of expenditure on food; Food bank use; Food insecurity; Coping strategy index; Social mobility (across generations and in the shorter term); Numbers moving into (and out of) poverty | Food preferences; Food purchasing; Food preparation; Food consumption; Food waste; Breastfeeding | Primary/secondary health care records | Physical activity; Mental health; Wearable device data; Chronic disease management; Health insurance data | Access to sanitation & potable water; Use of universal healthcare services; Use of nutrition/dietitian services; Use of mental health services |
| Regional/ National | Production indices of specific food groups; Production values; Export/import quantities & values; Dietary energy supply adequacy; Share of dietary energy supply derived from cereals, roots and tubers; Protein supply; Protein supply of animal origin; Local food production; Organic agriculture; Policies and incentives for farmers; Local or Community initiatives | Cereal import dependency; Population living in poverty; Un/Employment rates; Proportion of expenditure on food; Food prices (food basket & food groups); Food bank use; Financial aid for families; Food emergency services; Disruption food provision services (schools, community kitchens, etc.); Food delivery services | Purchasing patterns (supermarkets, grocery stores, take away, restaurants); Food waste; Food advertisement; Supplement sales; Policies & incentives promoting specific foods | Low birthweight; Stunting/wasting; Overweight & obesity; Micronutrient deficiencies | Hospital admissions; Prescribed/OTC drugs purchasing; Mortality rates (disease-specific & all cause) | Provision of sanitation services & potable water; Universal healthcare services; Nutrition/dietitian part of universal healthcare; Mental health part of universal healthcare; Healthcare services disruption; Hospital admission patterns |
| Global | UN Food and Agriculture Organisation (FAO) surveillance data | Global Hunger Index; Global Food Security Index | Global Dietary Database | WHO, UNICEF and Global Nutrition Report surveillance data | WHO and Global Burden of Disease and CDC (with regional equivalents) surveillance data | Commonwealth Association of Dietitians and Nutritionists, European Federation of Associations of Dietitians (with regional equivalents) |